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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,849	01/05/2006	Gerard De Haan	348162-982690	3974

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EXAMINER	
ROGERS, SCOTT A	

ART UNIT	PAPER NUMBER
2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,849	DE HAAN, GERARD	
	Examiner	Art Unit	
	Scott A. Rogers	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5 Jan 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/13/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *Detailed Action*.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-14 are rejected under 35 U.S.C. 102(a) as being anticipated by Franzen (WO 02/058385 A).

Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Franzen (US 7315331 B2).

Note that WO 02/058382 A and US 7315331 are equivalent disclosures. The rejection below is made in reference to the US Patent.

Referring to claim 1:

Franzen discloses a motion-compensated image signal interpolation unit (see Fig. 14) for generating from an adaptive interpolator (10) an interpolated image intermediate a first and a second image, the interpolated image being located at a first predetermined temporal distance from the first image and being located at a second predetermined temporal distance from the second image, the interpolation unit comprising: motion estimation means (20) for furnishing a first and a second motion vector relating to the first and second image; furnishing means (55) for furnishing a first group of samples on basis of values of pixels of the first image and the first motion vector and for furnishing a second group of samples on basis of values of pixels of the second image and the second motion vector; and filtering means (40) for ordered statistical filtering of the samples of the first and the second group to produce a first value of a first pixel of the interpolated image, whereby a first quotient is substantially equal to a second quotient, the first quotient being determined by a first spatial distance between a first one of the samples of the first group and a second one of the samples of the first group and the first predetermined temporal distance, the second quotient being determined by a second spatial distance between a first one of the samples of the second group and a second one of the samples of the second group and the second predetermined temporal distance. See col. 11, line 13 to col. 13, line 57.

Referring to claims 2-3:

Franzen discloses the motion-compensated image signal interpolation unit as claimed in claim 1, whereby the filtering means (10) include a median filter (a weighted median filter). See col. 11, line 27 to col. 12, line 51, and col. 13, lines 11-29.

Referring to claim 4:

Franzen discloses the motion-compensated image signal interpolation unit as claimed in claim 3, whereby a particular weighting coefficient of the weighted median filter for weighting a particular sample of the first group of samples is higher than each of the further weighting coefficients for weighting further respective samples of the first group of samples, the particular sample being located in the center of the first group of samples. See at least col. 11, line 27 to col. 12, line 13.

Referring to claim 5:

Franzen discloses the motion-compensated image signal interpolation unit as claimed in claim 4, whereby the particular weighting coefficient is higher than a sum of the further weighting coefficients. See at least col. 11, line 27 to col. 12, line 13.

Referring to claim 6:

Franzen discloses the motion-compensated image signal interpolation unit as claimed in claim 1, whereby a second value corresponding to the first one of the samples of the first group equals a third value of a third one of the pixels of the first image. See col. 11, line 13 to col. 13, line 57.

Referring to claim 7:

Franzen discloses the motion-compensated image signal interpolation unit as claimed in claim 1, whereby a second value corresponding to the first one of the samples of the first group is computed by means of interpolation of a third value of a third one of the pixels of the first image and a fourth value of a fourth one of the pixels of the first image in a spatial environment of the third one of the pixels. See col. 11, lines 27-50.

Referring to claim 8:

Franzen discloses the motion-compensated image signal interpolation unit as claimed in claim 1, whereby a direction of a line segment, connecting the first one of the samples of the first group and the second one of the samples of the first group, corresponds with the first motion vector. See col. 11, lines 27-50.

Referring to claim 9:

Franzen discloses the motion-compensated image signal interpolation unit as claimed in claim 1, whereby a direction of a line segment, connecting the first one of the samples of the first group and the second one of the samples of the first group, corresponds with a difference vector, the difference vector corresponding to a difference between the first motion vector and a third motion vector in a spatial environment of the first motion vector. See col. 11, lines 27-50.

Referring to claim 10:

Franzen discloses the motion-compensated image signal interpolation unit as claimed in claim 1, further comprising edge-detection means for detecting an orientation

of an edge in the first image and whereby a direction of a line segment, connecting the first one of the samples of the first group and the second one of the samples of the first group, is orthogonal to the orientation of an edge. See col. 11, lines 27-50.

Referring to claim 11:

Franzen discloses an image processing apparatus (100) comprising: receiving means (50) for receiving an image signal representing a first and a second image; and a motion-compensated image signal interpolation unit (10) coupled to the receiving means, for generating an interpolated image intermediate the first and the second image, the interpolated image being located at a first predetermined temporal distance from the first image and being located at a second predetermined temporal distance from the second image, the interpolation unit as claimed in claim 1. See col. 12, line 52 to col. 13, line 57.

Referring to claim 12:

Franzen discloses an image processing apparatus as claimed in claim 11, further comprising a display device for displaying the interpolated image. See col. 7, lines 64-67.

Referring to claim 13:

Claim 13 is the method claim corresponding to operation of the interpolation unit recited in claim 1 and is therefore rejected for the same reason in view of Franzen.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Franzen in view of well known prior art (Official Notice).

Referring to claim 14:

While Franzen does not disclose a computer program product to be loaded by a computer arrangement, comprising instructions to generate an interpolated image as achieved by the method recited in claim 13 (and taught by Franzen), it is notoriously old and well known to perform image processing such as interpolation using a computer program product. Therefore, it would have been obvious to have implemented the interpolation method recited in claim 13 and taught by Franzen as a computer program product in order to provide a way for the motion-compensated image interpolation technique to be more widely and more flexibly used in industry.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory

obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-14 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. US 5,534,946 A in view of 7.315,331 B2 (Franzen). The application claims correspond to the patent claims in US 5,534,946 with the added features taught by Franzen as discussed in the rejection above under 35 USC 102. It would have been obvious to one of ordinary skill

in the art to have modified the patent claims in US 5,534,946 in view of Franzen in order to improve interpolation of intermediate images using a weighted median filter for complete compensation of motion estimation errors.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --- Motion-compensated image signal interpolation using a weighted median filter ---.

Cited Art

It is noted that SPIE publication by Franzen cited by the applicant also discloses the claimed algorithm for motion-compensated interpolation of temporal intermediate images using a weighted median filter.

The other art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A Rogers whose telephone number is 571-272-7467. The examiner can normally be reached Monday through Friday 8:00am-5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Coles can be reached at 571-272-7402.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC2600 Customer Service at 571-272-2600. Official correspondence by facsimile should be sent to 571-273-8300. The USPTO Customer Service Center phone number is 800-PTO(786)-9199 or 571-272-1000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Scott A Rogers/

Primary Examiner, Art Unit 2625

5 July 2010